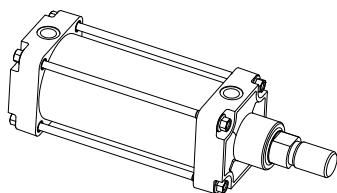


Pneumatic cylinder PZS Hydro-pneumatic cylinder HPZL

Operating instructions



PZS Standard: II2GDcT4(130°C) $-10^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

PZS VITON (VI): II2GDcT4(130°C) $-10^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

HPZL Standard: II2GDcT4(130°C) $+15^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

HPZL VITON (VI): II2GDcT4(130°C) $+15^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

1. Variations

A	Basic model
FV	Front flange
FH	Rear flange
H	Foot mount
SHS	Swivelling at the rear spherical
D	Double-acting
S	Hydraulic at cover end
Z	Hydraulic at connecting-rod end
N	without cushioning
P	Standard cushioning at both ends
PV	Standard cushioning at the front
PH	Standard cushioning at the rear
PP	Progressive cushioning at both ends
PPV	Progressive cushioning at the front
PPH	Progressive cushioning at the rear
T	Double-ended piston rod
R	Stainless piston rod
E	Equipped for proximity switches

2. Operation

By applying or releasing air pressure respectively oil in the cylinders, the piston is moved backward and forward. The piston rod transmits these movements to the outside.

3. Application

- The cylinder is intended for the transport of masses and the transmission of forces.
- Its application as a spring or cushioning element does not constitute use as intended. Unacceptable stresses may occur.
- These devices can be used under the specified operating conditions in zones 1 and 2 of potentially explosive gas atmospheres, and in zones 21 and 22 of potentially explosive dust atmospheres.
- You must only operate the cylinder with the specified operating media. The use of gases does not constitute use as intended.
- You should use the cylinder in its original condition, without any alterations of your own. Approval will lapse in the event of any interference with the machine not carried out by the manufacturer.

4. Operating conditions

Max. operating pressure	10 bar
Ambient temperature	PZS Standard: -10°C to $+60^{\circ}\text{C}$ PZS VITON (VI): -10°C to $+80^{\circ}\text{C}$ HPZL Standard: $+15^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ HPZL VITON (VI): $+15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ When operated in the non-EX area, the maximum ambient temperature can be 80°C .
Temperature of the medium	PZS Standard: -10°C to $+60^{\circ}\text{C}$ PZS VITON (VI): -10°C to $+80^{\circ}\text{C}$ HPZL Standard: $+15^{\circ}\text{C}$ to $+60^{\circ}\text{C}$ HPZL VITON (VI): $+15^{\circ}\text{C}$ to $+80^{\circ}\text{C}$ When operated in the non-EX area, the maximum temperature of the medium can be 80°C .
Operating utilities	<ul style="list-style-type: none"> dried compressed air of quality class 5 as per ISO 8573-1, lubricated or non-lubricated Hydraulic fluids of at least pollution category 20/17 according to ISO 4406, Flame point $>185^{\circ}\text{C}$ Recommendation: Mobil Vactra No.1 or other slight oils of viscosity class ISO VG 32 according to DIN 51519
Installation position	As desired
Piston rod loading	See chart Side loads to the rod are not allowed
Materials	Piston rod: High-alloy steel Cylinder tube: PZS: Aluminium alloy Mg<7,5% HPZL: High-alloy steel Head and end cap: Aluminium alloy Mg<7,5% Bolts and nuts: High-alloy steel Seals: NBR und VITON

5. Commissioning

You must comply with the details shown on the nameplate. Installation and commissioning must be carried out by authorised technicians as set out in the operating instructions. You must comply with all applicable national and international regulations.

WARNING!

Discharging of electrostatically charged components can lead to sparks that can cause an explosion.

- For the operation of the cylinders you should use only hoses and bundles of hoses up to a maximum external diameter of 20 mm.
- Connect conductive metal parts together for potential equalization
- Earth the entire system.

Impacts involving rust and light metals and their alloys may cause sparks.

- Do not use any tool with corroded surfaces.

- Protect the product from falling objects.

Install the cylinder in such a way that there are no transverse forces acting on the piston rod. Transverse forces may lead to unacceptable heating.

Some piston rod attachments and fastening elements permit oscillating rotary and swivelling movements. The use of these elements as radial plain bearings with circumferential speeds greater than 1 m/s does not constitute use as intended. This may give rise to unacceptable heating.

- If necessary, adjust the cushioning in such a way that the piston arrives safely at the limits of travel and neither impacts abruptly nor springs back.
- The intake of compressed air must not be drawn from EX-protected areas. Compressed air must not be expelled into areas with potentially explosive dust atmospheres. If necessary, remove the mounted silencer at the respective port and mount a hose fitting. Lead the exhausted air via hoses out of the dust EX area.
- When selecting the materials for installation tools and fastening accessories, you should be alert to corrosion, wear and mutual reactions.
- Restrict the number and dimensions of detachable connections to a minimum. Use short hoses and pipes. In doing so you should avoid the occurrence of mechanical stresses.
- Seal any unused orifices with plugs or caps.
- Ensure that all surfaces that require cleaning are easily accessible.

6. Operation

- Adhere to the operating conditions and the detailed operating instructions.
- Adhere to the function mode of your cylinder. Do not operate the pneumatic side of the cylinder hydraulically, or vice versa.
- Always remain within the permissible limits.
- Do not use thaw fluids (Glycol) when operating in EX-area.
- High-frequency operation can cause unacceptable heating of the operation medium. Observe and limit the medium temperature to the admissible level if necessary.

7. Maintenance and servicing

WARNING!

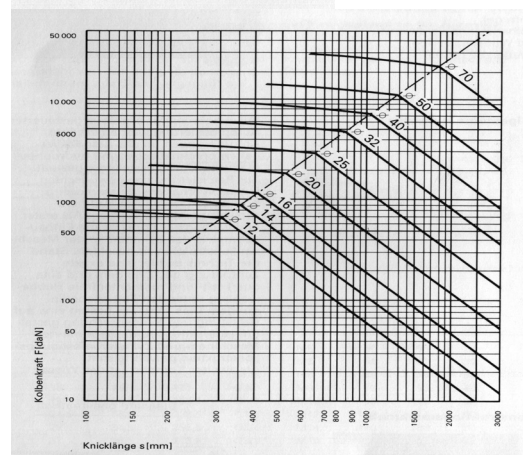
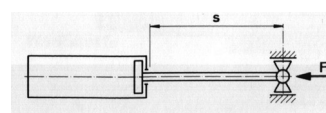
Dust deposits on heated surfaces are highly inflammable. Clean the product regularly.

- Comply as necessary with the maintenance intervals of any accessories used.
- Service the cylinder after 2 million cycles, or after 6 months at the latest.
- Check that your product works faultlessly:

Malfunction	Remedial action
External damage following visual check	1. Exchange the cylinder, or 2. Return the cylinder to SPECKEN DRUMAG for servicing.
Longitudinal marks on the piston rod.	Return the cylinder to SPECKEN DRUMAG for servicing.
Loose fit of the cylinder attachment and the fastenings on the piston rod.	Tighten the fastening bolts.
Dry lubricant residues firmly stuck to the piston rod.	Clean the piston rod with a soft cloth. See operating instructions.
Uneven running	See operating instructions.
Piston impacts heavily at the limit of travel.	1. Adjust the damping at the limit of travel as necessary, otherwise 2. Return the cylinder to SPECKEN DRUMAG for servicing.
Audible air leaks or oil leaks from the piston rod gland	1. Replace the part subject to wear and tear, or 2. Return the cylinder to SPECKEN DRUMAG for servicing.
Oil escaping from the air supply network	1. Replace the part subject to wear and tear, or 2. Return the cylinder to SPECKEN DRUMAG for servicing.

- The replacement of parts subject to wear and tear and of spare parts is possible in individual cases. Repairs of this kind must only be carried out by trained and certified technicians. Contact SPECKEN DRUMAG.

Free effective length in relation to piston force (loading as shown in sketch)



Konformitätserklärung

Declaration of Conformity

(im Sinne der Richtlinie 94/9/EG, Anhang VIII)
 (according to EC Directive 94/9/EC, Appendix VIII)

DRUMAG GmbH erklärt in alleiniger Verantwortung, dass die

Pneumatikzylinder PZS
Hydropneumatikzylinder HPZL
 mit Kolbendurchmessern 40, 50, 63, 80, 100, 125, 160, 200, 250 mm

der Kategorie 2G und 2D, auf die sich diese Erklärung bezieht,
 übereinstimmen mit der

declares in sole responsibility that the

Pneumatic Cylinder PZS
Hydro-pneumatic Cylinder HPZL
 with Piston diameters 40, 50, 63, 80, 100, 125, 160, 200, 250 mm

*in category 2G and 2D that are subject to this declaration are meeting
 the requirements set forth in*

Richtlinie 94/9/EG
Directive 94/9/EC

Angewandte Norm: **DIN EN 1127-1:2008-02, DIN EN 13463-1:2003-06,**
 Applicable standard: **DIN EN 13463-5:2004-03**

Die Produkte sind mit folgender Kennzeichnung versehen:
The products are marked with the following characteristics:

 II 2GD c T4 (130°C)-X

DRUMAG GmbH hinterlegt die gemäß 94/9/EG Anhang VIII geforderten Unterlagen bei
 benannter Stelle:
 TÜV Product Service GmbH, EU-Kennnummer 0123
 EG-Bescheinigung Nr. EX9 1304 50296 005

DRUMAG GmbH will archive the documents required according to 94/9/EC at the following
 location:
 TÜV Product Service GmbH, EC-Code 0123
 EC-Certificate No. EX9 1304 50296 005

DRUMAG GmbH

Bad Säckingen, den 10.04.2008

Ort und Datum der Ausstellung
 Place and date of issue


 Funktion: Geschäftsführung U. Ziegler
 Function: Managing director U. Ziegler